BIOLOGICAL RATIONALE OF GAMING DECISIONS (FORKS IN THE ROAD)

3-30-99 EWA GAMING

Notes begin with Day Three of the game (October 1993):

October 1993

Background: CS-FR escapement: healthy 103,000; SJR =starting to rebuild; 2300 adults, 900 jacks; WR still depressed; 1993 WR escapement 300;

No substantial fish protection issues evident for this month

November 1993

Noticable numbers of larger juvenile salmon are being salvaged.

Note: Closed DCC at beginning of the month based on fish monitoring.

December 1993

DS over 1,000 in FMWT; @ 79.3; no DS concerns this month.

Large juveniles continue to be salvaged.

FORK: Should we use some of EWA assets to reduce exports? We let the large juveniles just go in November; need to give them some protection this month. 5000 cfs reduction for 10 days uses all EWA water in SL.

DECISION: Hold exports at 8,000 for the entire month to protect large CS juveniles and take 2000 cfs through Delta island (Bacon) screens. Cost for 25 days about 200 TAF.

January 1994

DS are farther downstream @ 75 km. Low DS salvage. If we moved X2 about 3 km, what would be the potential impact on DS? We may have changed conditions by moving X2 upstream with the 20% increase in exports. Take no action this month for DS.

DCC closed, but would not have been closed historically. Need to adjust thinking about salvaged

OK on CS this month. In November, Merced hatchery released 150-200 mm size fish; still seeing some in export salvage and they will probably be around for a while. Accounts for some of the differences we are seeing. Vernalis flows about 1700 cfs, so probably not moving SJR fry into Delta.

No fish actions this month.

February 1994

DS @ 80 km; monthly DS salvage = 174 adults; X2 @71 km. FMWT = 1000. Should not use assets at this time; will probably need later.

Historical DCC closed.

Most of CS in the Delta are Merced yearlings, plus some Coleman hatchery LFR are beginning to appear. Vernalis Q=2000. Monitoring data would be better than we currently have with a marking program.

Fork: Need more flow in SJR to help SJR salmon?

Decision: Don't buy flow on SJR. No fish actions this month.

March 1994

DS 78.8; salvage = 169 adults (mainly at end of month); X2 =74.4

CS: small unmarked (probably SJR) fish are showing up and some WR are showing up.

FORK: Add flows for SJR CS and/or curtail pumping for WR?

Monthly Vernalis 2200 cfs.

DECISION: Augment 2000 cfs beginning in mid-March through mid April. Amounts to 120 TAF, $12 million. 60 TAF/ month and $6 million/month. Exports already low; no need to further restrict.

April 1994

DS @ 98.2; salvage =948; X2=77.5; trigger expected later in month.

Note: Need to reconcile that DS numbers do not reflect the VAMP.

Vernalis flow was increased last month and first two weeks of April.

Fork: Decrease exports in first two weeks of April for salmon?

Decision: Cut exports by 30 TAF for SJR salmon. Cut by 1000 cfs for the first two weeks of April.

May 1994

Tough issues: How much will the VAMP have changed entrainment values for DS, CS and ST? Has the past months X2 change downstream helped reduce DS entrainment? How much?

There was historically a huge spike in DS. Actions on X2 and export changes may well have reduced this spike.

Fork: What else is there to do? Spot purchase on the San Joaquin?

Decision: No purchase; flows pretty high (5000-6000)

Note: This April –May SJR peak matches pattern of history.

June 1994

DS mean 93 km early June; later shifts down stream.

Same tough issues as last month regarding VAMP and X2 need resolution.

Historically had DS restrictions.

DS population can be expected to move downstream sometime in coming months.

No CS issues.

Have increasing ST (SJR) densities.

Improved X2 by 7 km; outflow is 2000 cfs better; SJR = 1525 cfs

Fork: WR and Keswick releases . Keep it for later temperature purposes?

Decision: 11,000 cfs @ Keswick is enough for temperature control; 13,000 not needed. Therefore, back 130 TAF into Shasta from SL. Brings Shasta up above 1.9 pool with potential temperature benefits?

Export reduction by 1700 helps ST.

Note: Confusion about details. Revisit. Reduction in pumping for free?

July 1994

DS are out of the woods; have moved downstream.

No ST issues.

SB salvage increased 3-fold from 150,000 to about 435,000.

August/September 1994

No fish issues.

NEW WATER YEAR

Note: Dealing with history, not model outputs

October 1994

DS: Lowest FMWT; around 88 km

Chinook salmon escapement = WR: couple hundred; SR: 1600; SJR: 4500.

November 1994

No fish present in Delta.

December 1994

Big salmon month; about same numbers in both facilities.

Previous FMWT=124 very bad.

Fork: Reduce exports to increase survival of salmon?

Decision: Reduce exports to 8,000 from 12,000 for the second two weeks. 2000 through the Delta wetlands screens.

Fork: Buy SJR flow? (SJR= 1300 cfs)

Decision: No acquisition.

January 1995

DS: Triggered by model, but needed action is not clear. Density <10/TAF.

Fork: Big SJR pulse in salvage. Lot of fish have moved into the Delta. Can make the case that lots are surviving well in Delta and the entrainment loss may not be significant; as in dry period. On the other hand, we reduced exports in Dec to protect a similar CS distribution. Conservative approach would be to reduce exports in the second half of the month and help Delta smelt too.

Decision: Start export reduction at 10,000 (11,500 cfs) with 2000 through Bacon and stay with for the month.

February 1995

No DS problems.

Salmon fry and steelhead present in salvage.

Take no action for fish.

March and April 1995

No fish issues.

No actions.

May 1995

VAMP holds exports low.

High CS and record high ST

No fish actions

June 1995

Fork: Reduce exports from 7,300 historical (would go to 13,000) to 6500 cfs to protect ST?

Decision: Salvage of splittail was reduced by half (to 800,000), but was considered to still be too high.

Fork: 5,000 cfs exports; with 2,000 thru Bacon to reduce salvage of ST to 400,000.

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